

## Transportation ~~Element~~

Style Definition: Heading 2

### Overview

The bedrock of a city's ~~character~~functionality is its transportation infrastructure. How people move dictates whether a city needs a redundant system of roadways, sidewalks, bicycle facilities, transit service, or parking, and the relationship to land uses and the built environment. As a result, a well-planned transportation system is critical to a local as well as regional economic stability and growth.

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*Transportation and land-use: ~~two~~*

*Two sides of the same coin...*

*The City of Frederick and this Plan describe transportation and land-use in separate chapters, but on the ground they are inseparable. Each decision about what sort of land-use the City should have, and each dollar spent on a given transportation mode; ~~subtly~~ influences how people travel and what sorts of places thrive and grow.*

### The basic link of density and travel

A place that has a dense mix of homes, businesses, and services works best when people move slowly through it on foot or bike, and those places can only form when there is significant investment in walking and bicycling. A place that is low-density and has little or no mixing of homes, businesses, and services works best when people move fast through it in a car, and those places can only function when there is significant investment in roads and parking. ~~As the City invests in walking and bicycling or in driving, more of that kind of place can thrive.~~

### What about transit?

Public transit moves people much faster than walking to places where they need to get around on foot. Transit, then, best serves those dense places that thrive best with foot traffic. MARC trains and MTA buses function well in bringing people from Frederick to Rockville, Silver Spring, and downtown Washington ~~because downtown Washington is. These destinations are~~ dense enough that travelers can easily walk to work from their stops, and the

reason downtown Washington can be so dense is ~~because~~that it is served by high-quality public transit and the foot traffic that transit brings.

This is the understanding behind what's often called *transit-oriented development*. To make sure people can easily get from their homes to the station and from there to work, a city will try to focus more dense development around the station, with destinations – like shopping and services – nearest the station.

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In Frederick, as in other communities, transportation and land use issues are interconnected. Unfortunately, the City's transportation infrastructure has not been efficiently integrated into its developed areas, resulting in inefficient land uses and inefficient patterns of movement by its residents and visitors. Since the 1950s, new development in Frederick has increasingly taken the form of low- to medium-density residential neighborhoods and commercial strip centers. Rather than carry forward the character and connections of nearby neighborhoods, such as Monocacy Village and Frederick Heights, these areas have been isolated. As a result, they have not contributed to the development of an efficient citywide transportation system.

Frederick's ~~strategic location~~position within the larger Baltimore-Washington metropolitan regions is an asset for the community, but it does pose particular transportation challenges. Frederick sits at the confluence of two major interstates (I-270 and I-70), three major US highways (US routes 15, 40, and 340) and three major state highways (MD-~~354~~180, MD-355, and MD-26). While ~~we have~~the City has always been a crossroads, interconnections between all these major roads has placed demands on ~~our~~the local transportation system.

Finally, Frederick has the most bicycles per capita in the Washington Metropolitan Region and extremely high recreational bicycle use. Despite this, few people who both live and work within the City commute by bicycle, preferring instead to drive primarily due to lack of safe and comfortable bicycle infrastructure. This puts pressure on our roads and parking system and adds vehicular traffic on city streets.

The objective of this Transportation Element is to outline policies that balance multiple interests while creating a ~~balanced~~-transportation system that efficiently ties the City together. The Issues and Opportunities section of this element outlines several guiding principles associated with sustainable, integrated transportation. These principles are:

1. Transportation choice;
2. Transportation demand management and design;
3. Neighborhood character;
4. Funding sources; and
5. Regional collaboration.

The policy section of this element reflects the comments of participants at various public meetings, resident surveys, and workshops. The majority of these policies focus on an

increase in transportation options on a road system that complements the City's diverse land uses.

Addressing these concerns will require a number of physical and policy changes, including new and expanded facilities for bicycles, pedestrians, and automobiles; improved intersections; and additional transit service.

## Major Issues and Opportunities

Our City's transportation infrastructure must serve four distinct markets:

1. Intracity travel, for people who live in Frederick and are going places within its borders.
2. Outgoing travel, for people who live in Frederick and are going places outside its borders.
3. Incoming travel, for people who live outside Frederick and are coming into the City.
4. Pass-through travel, for people moving through the City but don't intend to stop.

	Going to Places Inside	Going to Places Outside
Live Inside	Intracity Travel	Outgoing Travel
Live Outside	Incoming Travel	Pass-Through Travel

In the questionnaire that was administered in 2019 to launch the 2020 Comprehensive Plan process, residents~~Our City's transportation infrastructure must serve four distinct markets:~~

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- ~~4. Pass-through travel, for people moving through the City but don't intend to stop.~~

~~Residents~~ noted issues with how we handle each of these markets, but one of the most significant issues ~~noted~~ was the ability of Frederick's transportation system to handle growing demand in all four markets, caused by economic recovery and ongoing growth.

Frederick's commuters come from and go to counties in four states, though the vast majority (over 85 percent) commute ~~to or from within~~ Maryland. The ~~city~~City is a net commuting destination, with 58 percent more people commuting into the City than commuting out of it. This is down from 65 percent in 2010. This may reflect a growing job market in Washington's inner suburbs, allowing Frederick to function as a center in its own right while also a suburb of the District of Columbia. In addition, a sizable proportion of Frederick's residents live and work in the city. ~~suburb to District of Columbia.~~In 2017, 9,217 locals held 19% of the city's 48,381 jobs. (US Census Bureau)

Other issues noted by residents included:

- The need to reduce traffic congestion;
- The impact of new low-density residential development on vehicle traffic; and
- Unsafe speeding and intersections.

#### 2017 Job Information<sup>†</sup>

<u>2017 Job Information</u>				
	Out-Commute		In-Commute	
All Counties	24,776	100%	39,164	100%
Frederick County, MD	5,479	22%	16,585	42%
Washington County, MD	1,165	5%	4,397	11%
Montgomery County, MD	7,016	28%	3,483	9%
Carroll County, MD	773	3%	2,026	5%
Baltimore County, MD	1,315	5%	1,468	4%
Prince George's County, MD	1,326	5%	1,120	3%
Anne Arundel County, MD	933	4%	874	2%
Adams County, PA	95	0%	845	2%
Howard County, MD	1,250	5%	839	2%
Berkeley County, WV	74	0%	798	2%
Franklin County, PA	86	0%	760	2%
Jefferson County, WV	145	1%	713	2%
Baltimore city, MD	786	3%	611	2%
Loudoun County, VA	727	3%	550	1%
District of Columbia	723	3%	265	1%
Fairfax County, VA	775	3%	262	1%

<sup>†</sup>US Census Bureau, "LEHD Origin-Destination Employment Statistics Data 2017".

Source: US Census Bureau, 'LEHD Origin-Destination Employment Statistics Data 2017'.

~~In addition, a sizable proportion of Frederick's residents live and work in the city. In 2017, 9,217 locals held 19% of the city's 48,381 jobs<sup>2</sup>.~~

~~Other issues noted by residents included:~~

- ~~• The need to reduce traffic congestion;~~
- ~~• The impact of new low-density residential development on vehicle traffic; and~~
- ~~• Unsafe speeding and intersections.~~

When given an opportunity to choose three issues as the most important facing the city, residents overwhelmingly chose transportation issues. The top four issues identified by Frederick residents were traffic congestion (43 percent), reduction of sprawl-type development (34 percent), infrastructure financing (30 percent), and transportation network improvements (26 percent). In a similar question, where residents were asked where the city should focus—so not just what the problems are but where should the city look to solve issues—traffic management came in at number one, with 43 percent of respondents.

## Transportation Choice

All Others 2,108 9% 3,568 9%

A safe and effective transportation system allows people to pick or choose whichever mode that best fits their trip need. Unfortunately, in Frederick, given the constraints, in many cases, driving is the only practical and safe travel option. Those who cannot afford a vehicle ~~or,~~ cannot drive, and ~~is~~are not served by public transit then ~~find themselves disadvantaged in~~have a harder time running routine errands or participating in Frederick's vibrant civic life.

All Travel Mode Use in Frederick County						
Mode	3-5 days a week	1-2 days a week	Few days per month	Few days per year	Only on weekends	At least once in the past year
Car Share	0.1%	0.3%	0.0%	0.2%	0.0%	0.6%
Ride-Hailing (TNCs)	0%	0%	1%	8%	2%	12%
Transit	4%	1%	2%	17%	1%	26%

<sup>2</sup>US Census Bureau.

Commute Carpooling / Vanpooling	5%	2%	1%	2%	n/a	11%
Bicycle Use	1%	1%	2%	2%	3%	8%

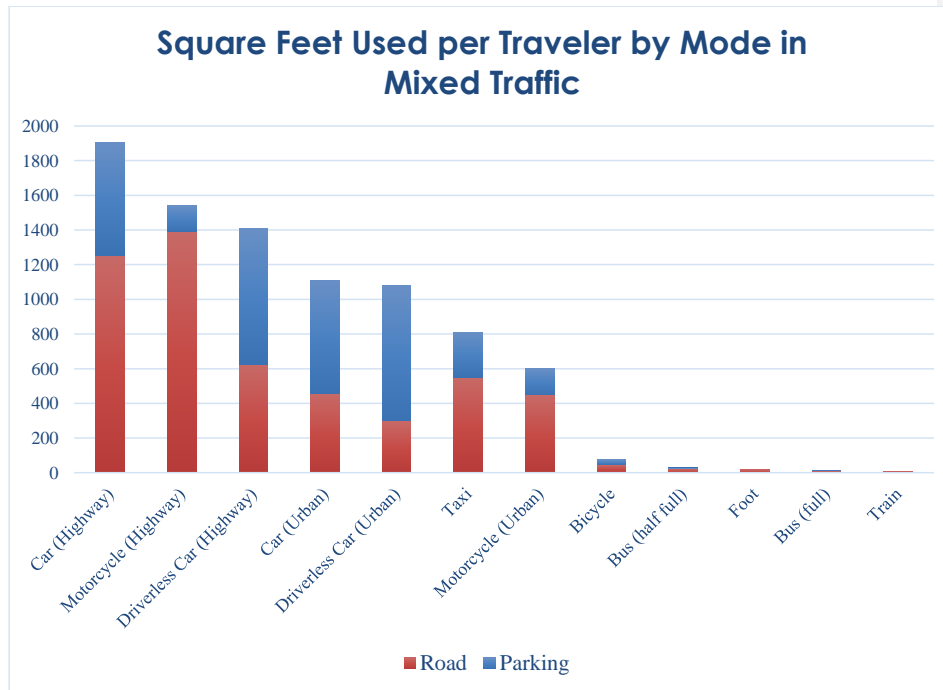
Source: ~~Municipal~~Metropolitan Washington Council of Governments 2017-2018 Regional Travel Survey Update

Commute Mode in Frederick City, County, and the DC Region			
Mode	City	County	Region
Drove Alone	74%	78%	66%
Carpool	12%	10%	10%
Transit	5%	3%	14%
Walked	4%	2%	3%
Taxi, motorcycle, bicycle, or other	2%	1%	2%
Worked at home	4%	6%	5%

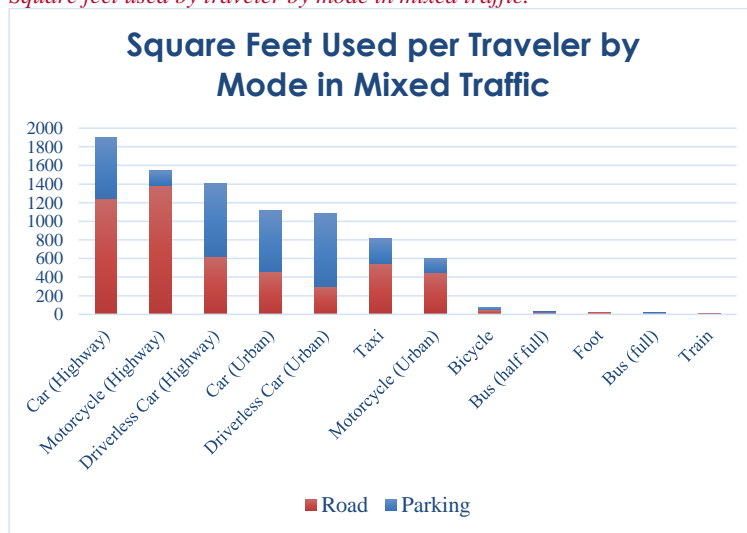
Source: US Census 2017 American Community Survey 5-year Estimates

## Streets and Roadways

Roads are critical to any city's physical form. Every day we walk, bike, and drive on them. They are the most permanent part of any city structure, and ~~while they are~~ much more than throughways for vehicular traffic, ~~they are so much more than that as well.~~



*Square feet used by traveler by mode in mixed traffic.*



This calculation shows how many square feet it takes to move a typical vehicle with a typical load through city streets and accommodate for their storage. For all vehicles, this includes following distance. For cars, motorcycles, and bicycles, this also includes 4 parking spaces (the national average number of spaces per vehicle). For trains and buses, this includes maintenance facilities like railyards and garages. For private cars, this assumes an average of 1.2 people per vehicle – 1 in 5 cars carries someone else. For taxis, driverless cars, and bicycles, this assumes an average of just 1 person per vehicle. Totals were calculated by the city using data from the Federal Highway Administration and the Transportation Research Board.

Until the popularization of the automobile in the 1920s, cities designed their streets to accommodate most trips by foot, horse, and train. The Frederick Town Historic District and the City's early 20<sup>th</sup> Century neighborhoods have many excellent examples of streets designed for foot traffic. However, following World War II, trends as diverse as the popularization of the automobile and federal lending standards encouraging cul-de-sac neighborhood designs and the separation of homes and retail contributed to changes in street design. Driving was actively encouraged, and so streets were designed to only accommodate driving. Because of how much more space is needed to accommodate a car trip instead of walking or bicycle trips (see [figure XXtable 3-4](#)), distances between homes and shops grew beyond the reach of people on foot. As a result, driving often became the only viable option for those living in the newer neighborhoods of Frederick.

Today, four principal problems face our road system: congestion, public safety, fragmented networks, and inequitable access to transportation facilities.

The first two issues – congestion and public safety – are made worse as the amount of driving increases, as measured by the total number of vehicle miles traveled, or VMT. The second two issues – fragmented networks and inequitable access to transportation – exacerbate problems caused by increased VMT and induce more VMT than the city might otherwise have. Methods to address each issue are interconnected and are described below.

[POP-OUT BOX]

### ***A primer on VMT***

***VMT stands for Vehicle Miles Travelled, or the total distance travelled by all vehicles within a certain area over a certain amount of time. This is not the amount of travel generated by the area but rather the amount the area's roads support, including incoming, outgoing, and pass-through traffic.***



## How is it measured?

### HOW IS IT MEASURED?

Every state must report VMT to the Federal Highway Administration's (FHWA's) Highway Performance Monitoring System, or HPMS. States measure this in a multistep process:

1. Classify all the roads into one of seven classes:
  - a. Interstate freeway
  - b. Rural principal arterial – other freeways and expressways
  - c. Principal arterial – other
  - d. Minor arterial
  - e. Major collector
  - f. Minor collector
  - g. Local road
2. Count traffic at a number of places along each kind of roadway (except local roads, which will be described later), typically for a 24-hour period on a Tuesday, Wednesday, or Thursday, or all three days, generally during the spring or fall to include school-related travel.
3. Multiply this number by the length of the road where the count took place.
  - a. Extrapolating linear distance from a single point is complex. Advanced modelling techniques take into consideration other count sites nearby, intersections, on/off ramps, and similar features.
4. Annualize this daily VMT data by multiplying it by 365.25.

Local road travel ~~needs to can~~ be estimated through models that take into consideration socioeconomic data, land-use patterns, travel on neighboring roads, and many other factors, as local roads typically are not included in the traffic counts described above.

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### Congestion

Frederick's location at the convergence of several major highways (I-70, I-270, US 15, US 40, and US 340) ~~createcreates~~ congestion ~~problems~~, particularly during the morning and evening peak periods, as well as on Friday nights and Sundays. Much of this traffic originates from outlying communities located far from the City limits. While widening these roads is a first impulse, experience and research has found that road widening only induces more traffic, and any improvement to travel times is short-lived. After only a few years, these projects typically result in the same level of congestion where the improvement was made while also inducing more congestion elsewhere in the system, sometimes even miles from the wider road. They bring the City forward for a time, but then set it back further than it was.

Nevertheless, congestion along ~~these~~ regional roadways is a real and significant problem for our community. Almost 85 percent of respondents to the Comprehensive Plan ~~survey~~questionnaire said there was a need to improve traffic flow on all kinds of roads. As a growing city in a growing region, we must find ways to accommodate new trips without needlessly increasing travel times or congestion. For many, driving is a necessity. There are several ways to ~~help~~ mitigate problems caused by highly-congested roadways directly without inducing congestion elsewhere:

1. Support efforts to charge a decongestion toll for drivers entering downtown Baltimore and downtown Washington, DC during rush hour. While many of Frederick's residents work in these cities' inner suburbs, they compete with inner suburban drivers for road space on I-70 and I-270. Research from Stockholm, Singapore, London, and elsewhere has found that decongestion tolls dramatically reduce traffic in and around the city centers, an effect that could ultimately benefit Frederick commuters even if they never enter either city center.
2. Support all-day, every day, two-way transit service to ~~Baltimore and the I-270 Corridor,~~ including the WMATA Red Line and ~~to~~ Union Station, as well as along the I-70 Corridor. While research has found that new or expanded transit service may not reduce traffic, as new drivers take the place of those who switch to transit, new transit expands options to those who want to avoid traffic, reducing impact on the community. This would enable people to bypass off-peak congestion and reduce the congestion impacts of out-of-town residents attending major events downtown.
3. Support and enact transportation demand management (TDM) programs, including parking reforms, ~~bike~~biking-to-work ~~days~~, piloting carsharing services like ZipCar or ~~Car2Go~~Free2Move, and subsidizing transit passes.
4. Support and enact transportation system management (TSM) programs, including timing traffic lights and installing ramp signals to help manage how congestion forms.

### Public Safety

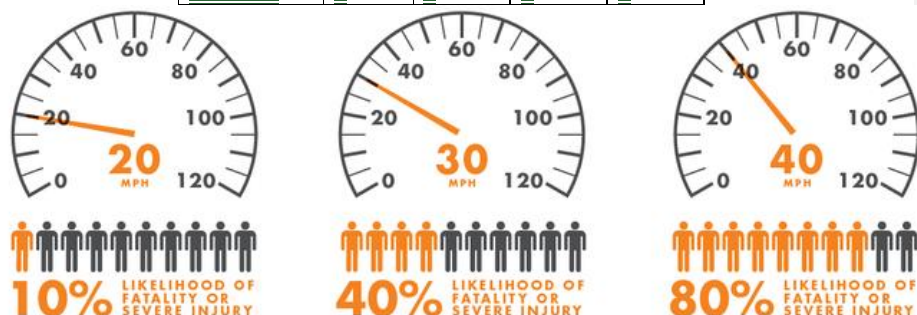
Driving is the thing people do basis. The Disease Control it as a leading the United States, over 30,000

<del>Crash Data for the City of Frederick, 2015-2018</del>				
	<del>2018</del>	<del>2017</del>	<del>2016</del>	<del>2015</del>
<del>Crashes</del>	<del>2,690</del>	<del>2,647</del>	<del>2,700</del>	<del>2,506</del>
<del>Injuries</del>	<del>389</del>	<del>409</del>	<del>371</del>	<del>392</del>
<del>Fatalities</del>	<del>0</del>	<del>1</del>	<del>0</del>	<del>0</del>

most dangerous on a regular Centers for (CDC) identifies cause of death in and every year people in the

United States are killed in car crashes. Research and experience from elsewhere in the region have found that as VMT increases, crashes and deaths increase faster. Driving is also associated with higher incidences of obesity, heart disease, and stress. Taken together, overreliance on driving as the dominant means of transportation for the city poses a public health hazard.

Crash Data for the City of Frederick, 2015-2018				
	2018	2017	2016	2015
Crashes	2,690	2,647	2,700	2,506
Injuries	389	409	371	302
Fatalities	0	1	0	0



## DEATH DUE TO SPEED

U.S. DEPARTMENT OF TRANSPORTATION, LITERATURE REVIEWED ON VEHICLE TRAVEL SPEEDS AND PEDESTRIAN INJURIES, MARCH 2000.  
[HTTP://WWW.NHTSA.GOV/ABOUT+NHTSA/TRAFFIC+TECHS/CURRENT/LITERATURE+REVIEWED+ON+VEHICLE+TRAVEL+SPEEDS+AND+PEDESTRIAN+INJURIES](http://www.nhtsa.gov/about/nhtsa/traffic+techs/current/literature+reviewed+on+vehicle+travel+speeds+and+pedestrian+injuries)



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Unsafe driving was a consistent theme in [Survey Questionnaire](#) comments, with speed being the biggest factor.

There are several possible ways the City might address public safety directly:

1. Have police and engineers work together to identify trouble spots and how the roadway's engineering may have contributed to crash danger without diminishing the usefulness of the road for vulnerable users such as those on foot or a bicycle.
2. Explore ways to change traffic enforcement, including ~~stings of ticketing~~ drivers who fail to yield to pedestrians in a crosswalk, ~~enact~~ and increasing the number of red light and ~~speeding~~ speed cameras at trouble spots.
3. Reengineer streets to accommodate the desired speed limit or below, to encourage safe driving without enforcement. Current engineering practice is to design roads to accommodate speeds 10 miles per hour over the posted speed limit as a safety precaution, so a road limited to 25 miles per hour is designed to accommodate 35 mile per hour traffic. While this practice reduces the frequency of crashes, it subconsciously encourages accidental speeding and increases crash severity, especially for people on foot.

### **An Integrated Motor Vehicle Network**

It is the responsibility of the City ~~is~~ to have a functional and integrated roadway network. In case of emergencies, redundant access points allow emergency vehicles to get where they need to go even when one of the access points is blocked. While the historic downtown is marked by a grid, creating significant redundancy, neighborhoods marked by curvilinear streets and cul-de-sacs are becoming increasingly common ~~in~~ outside the City core. These create bubbles that are difficult to serve or access. The City needs to continue to work with developers to ensure new neighborhoods are interconnected with the rest of the City and are planned so they can easily connect to future potential developments.

Planning for a highly redundant and interconnected road system can spread traffic through the network, removing the chokepoints that constrain traffic flow. When Milwaukee, Wisconsin, removed a segment of freeway from its downtown, extreme congestion did not materialize as predicted. Instead, the city's robust grid system simply absorbed the traffic, and rush hour travel times improved.

A highly interconnected network can also reduce VMT, ~~as non-motorized modes like walking and bicycling are slower than driving and so walkers, bicyclists feel the effects of~~ are able to navigate an interconnected network more easily than winding routes ~~through that include~~ dead-end streets ~~more acutely than do drivers and cul-de-sacs~~. If it is

significantly faster to drive, then people generally will, ~~adding to VMT not just by choosing to drive but also because~~especially if the layout of the network forces a longer journey than might otherwise be needed.

There are ~~already~~ two major roads planned for the City, and they are detailed below.

### **Christopher's Crossing ~~loop~~Loop**

A recent change to traffic patterns has been the construction of a road designed to form a complete loop around the city. When all segments of this road – composed of Monocacy Boulevard and Christopher's Crossing – are complete, this route will alter circulation and improve redundancy. The City should remain focused on construction projects that support this system, including the Fort Detrick Area for the Christopher's Crossing leg. The City's support for completion of this route should be two-fold: the CIP should continue to include the projects related to this road, and the City's leadership should continue to pursue additional funding from County, State and Federal agencies as appropriate.

### **North-South Road Network**

Another major redundancy link is the proposed North-South Road Network. Rather than a single roadway, this effort consists of both a newly constructed road and improvements to existing roads, including Linganore Road and MD 194, to improve connectivity. Primarily, this road can benefit the City by linking MD 26 to MD 144 ~~by, thereby~~ establishing a direct link between important commuter origin points without traveling on US 15 through the City of Frederick.

Past comprehensive plans have shown a singular limited-access highway between US 15 along the east side of the City to as far south as either MD 355 or I-270. There have been a variety of problems identified with this alignment, including wetland and parkland to the south and limited usefulness north of MD 26. The current plan indicates that these connections may be pursued in the future, but they are not key to the success of the project.

### **The parking system**

Integral to our motor transportation system is parking, what we do with our car once we get where we're going. On-street parking has existed since cars were first invented. As cars became more popular, drivers would park along residential streets, crowding out residents who needed neighborhood curb space for vehicle storage. Off-street parking requirements and off-street parking garages were created to create more storage space and encourage nonresidents to keep their cars out of neighborhoods.

While the focus of this section will be the City's historic center, parking touches all areas of the City.

Free off-street parking, common and often required by city land-use provisions outside of the core, is not truly free. A single surface parking spot can cost thousands of dollars to build and maintain, a cost that is passed along to consumers and renters. Surface parking also increases the distance between destinations – distances between storefronts on opposite sides of West

Patrick Street can be up to 600 feet as the crow flies, and 1,700 feet (a third of a mile) on foot once street crossings are taken into account. Surface parking can also increase the distances utilities and services need to travel to get to buildings, increasing costs to ratepayers and taxpayers.

An ongoing challenge will be to balance the benefits of surface off-street parking to drivers with their impacts on the City's landscape and residents who either cannot or prefer not to drive.

### **Downtown parking**

The City aims to provide access to its dense downtown by all modes: walking, biking, transit, and driving. Given the large spatial needs of driving and the shortcomings of supportive infrastructure for other means of access, the City has made a significant effort to accommodate drivers by establishing a downtown parking system. Through its two primary parking products – curbside and garage parking – the City has taken a customer-service approach to satisfying parking needs within Downtown.

### **Curbside**

Within Frederick's historic downtown and other older neighborhoods, most parking is on-street. The original plan for Frederick did not account for rear property access and so parking and garages were not able to be built as cars became more popular. While some alleyways have been built since 1765, most residents and businesses rely exclusively on parking spots in otherwise public space.

To accommodate on-street parking, the City aims to provide at least one open parking space per block at all times, a goal accomplished through a range of policies:

- Residential parking permits. The permits allow downtown residents to purchase a pass, allowing them to park in areas reserved for residents.
- Paid parking. For a small fee per hour, people can park for a set amount of time, encouraging people to try parking in the public garages (see next section) and reserving the public realm for drivers who feel they most need it.
- Time-limited parking. In several places around the city, people are limited to a certain amount of time, allowing increased turnover and giving more shoppers a chance to access downtown.

To address ongoing issues with a shortage of curbside parking, the City might implement the following policies:

- To address supply problems, the City might pursue the construction of new alleyways to allow people rear access to their properties.
- Where alleyways already exist, determine whether rear parking is not used and what might encourage its use.
- To address demand problems, adapt curbsides as needed to accommodate other means of access to downtown, whether those are ride-hailing services like Uber, protected bicycle lanes, or wider sidewalks.
- Restricting certain blocks to resident-only parking should be explored on a case-by-case basis.

## Garages

The City also provides five parking garages in the downtown core. Together, these garages provide 2,478 spaces for downtown workers and visitors. The newest spaces are provided in the East All Saints Street Garage.

There are three classes of user for the garage system: City and County employees; monthly pass holders; and daily users. The City and County are granted a certain percentage of spaces based upon how much of each garage they funded. Monthly pass holders pay \$97 per month to enter and exit an unlimited number of times per month. Daily parkers pay a flat fee of \$1 per hour to a maximum of \$12 per day, with slightly different fee structures for Sundays and evenings.

Together, the monthly pass holders, City employees, and County employees use approximately 85 percent of all parking spaces in garages during the workday. When taken on top of the needs of daily users, the City's garages are effectively full during the workday.

Garages, as large purpose-built buildings, present a unique suite of challenges. Each garage needs regular maintenance and overhauls; security cameras and personnel; payment equipment; and attendants. This is on top of the ongoing capacity problem and the need to replace or renovate older, obsolete garages.

To address these needs, the City might pursue the following policies:

1. Address parking supply by:
  - 1.1. Finding new streams of revenue to fund new garages.
  - 1.2. Build new parking structures to provide parking required to keep up with expected growth.
2. Address parking demand by:
  - 2.1. Exploring, funding, and building effective infrastructure for other modes of transportation in and through the City.
  - 2.2. Add additional bicycle parking spaces.
  - 2.3. Explore charging different monthly prices for different garages, as demand allows.
3. Continue to provide high-quality customer service with new technologies and attention to new and developing trends in transportation.

## **An Integrated Bicycle Network**

According to a 2019 study by the consultancy INRIX, 48 percent of all trips in the United States are 3 miles or less:<sup>3</sup> (Reed, *Managing Micromobility to Success*). Given the small size of the City, with nowhere more than 5 miles away from Square Corner, bicycling could be a major piece of Frederick's transportation system. Residents agreed, with 67 percent of Survey Questionnaire respondents indicating a need for more on-street bicycle routes and 78 percent saying the same of off-street bicycle routes. Just 19 percent of respondents said they

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<sup>3</sup>Reed, "Managing Micromobility to Success".

don't bicycle because they prefer to drive, with ~~most~~ the vast majority of people indicating that an incomplete or unsafe network was ~~a~~ the primary barrier to bicycling.

Historically, bicycling has been viewed as a recreational activity and city infrastructure has followed that view. People bike on trails that are built through parks and along floodplains. However, these trails are often not connected to the street grid, meaning it is difficult to access the entirety of the City by bicycle. There is little infrastructure available for bicycling to be used as transportation for everyday trips.

Not all infrastructure is appropriate for a given road. Surveys of national sentiment on bicycling found that around half of people are “interested but concerned” about bicycling, saying that they would ride if it felt safer. According to the National Association of Transportation Officials (NACTO), conventional bike lanes and “sharrows” – painted arrows on the asphalt – are only appropriate on the quietest side streets. Streets with speeds higher than 25 miles per hour or even a moderate volume of vehicle traffic should be served by protected bike lanes, which feature physical barriers separating cyclists and drivers. To the greatest extent possible, this network should enable anywhere-to-anywhere travel, allowing people to use a bicycle for any trip they like.

As a result of a recommendation in the 2010 Comprehensive Plan, the City has established an active and involved Bicycle/Pedestrian Advisory Committee. Thanks in part to their efforts, bicycle lanes are on 7<sup>th</sup> Street and North Market Street from 7<sup>th</sup> Street to 9<sup>th</sup> Street, and planning has begun on protected bicycle lanes on North Market from 9<sup>th</sup> Street to ~~USMD~~ 26. The City ~~might should~~ continue to build an integrated network with measures such as:

1. Determining ~~where~~ which roadways can accommodate bicycle lanes without reducing parking or reducing Level of Service for a given roadway below Level D.
2. Taking a survey to determine the number of people in Frederick who are similarly “interested but concerned” about bicycling in the City.
3. Commissioning an on-street bicycle plan that would show how the City might build a complete plan that integrates with the County and State bicycle facilities and plans.
4. Updating roadway standards to incorporate appropriate bicycle infrastructure for each roadway type and adding new standards for bicycle-primary streets consistent with NACTO’s All Ages & Abilities design guidance- (see chart below).

NACTO Contextual Guidance for Selecting All Ages & Abilities Bikeways				
Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	



Vehicle Speed				
Any	Any	Any	Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts	Protected bicycle lane
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	Shared street
≤ 20 mph	≤ 1,000-2,000		< 50 motor vehicles per hour in the peak direction at peak hour	Bicycle boulevard
≤ 25 mph	≤ 500-1,500	Single lane each direction, or single lane one-way		
	≤ 1,500-3,000		Buffered or protected bicycle lane	
	≤ 3,000-6,000			
	> 6,000			
	Any	Multiple lanes per direction		Protected bicycle lane
> 26 mph	≤ 6,000	Single lane per direction	Low curbside activity, or low congestion pressure	Protected bicycle lane, or reduce speed
		Multiple lanes per direction		Protected bicycle lane, or reduce to single lane and reduce speed
	> 6,000	Any	Any	Protected bicycle lane, or bicycle path
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Bike path with Separate walkway, <i>or</i> Protected bicycle lane
			Low pedestrian volume	Shared-use path <i>or</i> Protected bicycle lane

Source: National Association of City Transportation Officials. “Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities.” New York, NY: National Association of City Transportation Officials, December 2017.

An emphasis on on-street bicycling infrastructure should not come at the expense of ~~the~~ bicycling as recreation. Quite the opposite – as more people bicycle for transportation, it will be easier, faster, and safer for visitors and residents to access recreational trails.

~~One~~

An example of where the greatest aspects intersection of this will be solidifying bicycling for both transportation and popularizing recreation could provide benefits to residents and visitors of the City is the potential to enhance and increase usage of Frederick’s Historic Bike Loop. The Loop allows ~~visitors~~ people to explore and learn about Frederick’s large and well-preserved historic core as well as its significant resources in outlying areas. This area is too large to experience easily on foot, but by bicycle it can come alive. An on-street network of

all-ages bicycle infrastructure would be a major boon to this Loop, inviting families to bike Maryland's largest historic district.

A goal of this plan is to extend our ability to interpret history along existing and proposed bike routes.

[Insert Frederick History Bike Loop Map]

### **An Integrated ~~Sidewalk~~Pedestrian Network**

The most basic way to travel is either on foot or in a mobility device, such as a wheelchair or motorized scooter. While much of the City has adequate sidewalks, crosswalks, and curb ramps, especially in newer areas, some areas have impassible or even missing infrastructure. At some locations, this is due to historically preserved drainage systems that channel water across the pedestrian right-of-way to the street. At others, it is due to rarely-maintained concrete. Still others are blocked by utility poles, signage, or ~~even sidewalk seating~~ other street amenities that force people onto substandard surfaces like uneven bricks. And, for someone in a wheelchair, there is little more frustrating than getting to the end of a block only to find no ramp to cross the street.

A complete network of sidewalk infrastructure generally involves four aspects:

1. Ensuring at least five feet of uninterrupted wheelchair-accessible pavement runs along every block in the city, and even more in the downtown core where appropriate.
2. Ensuring crosswalks are safe and clearly marked
3. Ensuring maintenance is regularly conducted on sidewalks and crosswalks
4. Ensuring every pedestrian crossing has a ramp oriented toward the crosswalk

Walkable neighborhoods are also important to City residents. 69 percent of Survey Questionnaire respondents said a pedestrian-friendly neighborhood is appealing, and 61 percent said the same thing about having a sidewalk.

### **An Integrated Freight Network**

Freight flows to, through, and from Frederick. Large trucks are a common sight on East Street, South Street, Monocacy Boulevard, and US 15, and they connect Frederick's economy to the rest of the world. These trucks have particular needs and pose particular challenges to our transportation network, including large and dangerous blind spots; significant weight; large turns; and widely spaced wheels. To better manage the freight movement within the City, the City needs to identify roads that are most likely to see freight movement and plan the pieces of its road infrastructure – motor vehicle, bicycle, and sidewalk – to accommodate these added challenges.

Freight also means delivery services to businesses and homes. Such services require curb space, a precious commodity in a dense area like Downtown Frederick, or accommodations

for double-parking. If not properly accommodated, delivery services may end up blocking bicycle lanes or causing traffic congestion at busy hours of the day by blocking through-lanes, either of which creates inconvenient and even dangerous conditions for road users. Accommodations ~~may be~~ could include programs such as allowing double-parking during times of low traffic for commercial vehicles.

### **Road Diets and the Reallocation of Space**

As described earlier, cars use a significant amount of space in our cities even while in motion, but this can be decreased to some degree with a road diet, a catchall term for any narrowing of the road, even if there are no lanes removed.

A road diet reallocates some paved roadway space for purposes other than through-traffic. At its simplest, it narrows traffic lanes to better fit the road's purpose. A 12-foot-wide lane is appropriate for highway speeds, but 10 feet may be more appropriate for a minor arterial road. If a minor arterial currently has 12-foot-wide lanes, it might be wise to narrow them by a couple of feet, giving the extra road width to sidewalks or a median.

At its more complex, a road diet may remove a lane to right-size the road to the amount of traffic it handles daily. If a road was built to handle 50,000 vehicles per day but now only handles 25,000, it might be wise to remove a lane and give that road space to some other use: a center turn lane, a protected bicycle lane, sidewalks, street parking, a bus-only lane, or something else.

At times, however, there may be a need to conduct a road diet even when the road is carrying as many vehicles as it is designed to handle. This may occur when carrying private vehicle traffic is determined to be not the highest and best use of that paved surface, for instance if there is a particularly great need for a protected bicycle lane; if sidewalks are too narrow; or if a parallel road has excess capacity but is for some reason unfit for dieting.

Each of these kinds of diets improve the efficiency of a city's paved roadway network. They ensure rights-of-way and surplus paved surfaces are programmed so as to maximize value to City residents while also improving safety for all users by slowing traffic.

Paved surfaces and publicly controlled rights-of-way are a valuable resource like any other. How the City invests them and to which transportation network reflects the values of the City.

### **Equitable Access to the City**

~~In 2018, according to the US Census, approximately 1 in 8 Frederick households had fewer vehicles available than workers, and 1 in 20 had no vehicle available at all. This may hide the number of people who need a vehicle but find it to be a strain on an already tight budget. Between maintenance, car payments, gas, depreciation, and insurance, a car can cost more than \$8,000 per year according to AAA. A used car might be cheaper, but will still cost thousands of dollars per year.~~

~~Even for those who could afford vehicle, many cannot drive due to visual and other disabilities, such as vulnerability to seizures. Friends, transit, taxicabs, and transportation network companies (TNCs) like Uber and Lyft provide some mobility, but these options are either burdensome or more expensive than driving and are not equivalent to the freedom of movement given to drivers. Incomplete bicycle and walking networks alongside low-density land use and low-quality transit means car ownership is the only way to fully participate in City life. Those who cannot drive or own a car in such a situation must rely on their social networks to provide rides to and from events, jobs, shopping, education, and even civic participation. City residents should never feel left behind or disconnected from the rest of their community because of transportation problems. This plan must therefore be implemented with special care for those who rely on means of travel other than driving, and special attention should be made to reach out to communities where driving is less of an option.~~

## Transit

Frederick is served by five transit services:

1. ~~TransIT~~ buses, operated by the County, ~~serves~~serve destinations around the County and within the city, operating 6 days a week with no service Sundays.
2. ~~MARC Train~~, operated by the State, serves commuters that work south in the District of Columbia's inner suburbs as well as Union Station itself. Three trains go south in the morning and ~~core of the region~~three north in the evening during the workweek.
3. ~~MTA Commuter Bus~~, also operated by the State, allows commuters to access trains in Brunswick and the western side of WMATA's Red Line. Like MARC, ~~it runs~~ trains, commuter buses run south in the morning and north in the evening.
4. ~~Greyhound Lines~~ intercity buses is a private operator that connects Frederick with Chicago, Cleveland, Philadelphia, Baltimore, and Washington, DC, with transfers to points around the country.
5. ~~BayRunner Shuttle~~ intercity and airport shuttle buses is a private operator that connects Frederick with Western Maryland cities, Baltimore, and BWI Airport.

National transit ridership trends have been negative since the start of the decade. Since 2011, overall national ridership has declined 5.8 percent. Bus service has declined more, by 16.1 percent. In the DC region, the overall trend has been similar, due in part to ridership woes on WMATA's Metrorail system. Here, ridership fell by 12.9 percent overall and 8.7 percent on buses specifically. Frederick's TransIT has seen a much sharper decline of 28.4 percent. The annual decline seems to have hit a bottom in 2018, however, with TransIT posting an approximately 0.6 percent increase in ridership in 2019. Regional trends ~~have~~were also ~~been~~ positive in 2019, with the DC area seeing growth of 2 percent overall and 1.5 percent on buses specifically.

Ridership on MARC's Brunswick Line, which serves the City, has remained essentially flat since 2010. Ridership from Monocacy Station, south of the City, remains higher than

ridership from Frederick's station, likely due to the larger and more accessible parking lot near that station- and the lack of supportive density around downtown Frederick's station.

Annual Transit Trips <u>(all)</u>					
		Regional		National	
Year	Frederick	All Transit	Local bus	All Transit	Local bus
2011	836,000	587,610,00	256,414,00	<del>5,171,420</del> <u>10,208,520</u> ,00	<del>36,980</del> <u>5,171,420</u> ,00
2012	910,000	597,575,00	265,952,00	<del>5,275,400</del> <u>10,471,578</u> ,00	<del>50,216</del> <u>5,275,400</u> ,00
2013	864,000	580,547,00	257,238,00	<del>5,166,092</del> <u>10,528,324</u> ,00	<del>96,883</del> <u>5,166,092</u> ,00
2014	839,000	585,227,00	266,779,00	<del>5,097,647</del> <u>10,633,294</u> ,00	<del>102,842</del> <u>5,097,647</u> ,00
2015	761,000	586,782,00	268,280,00	<del>5,026,601</del> <u>10,496,457</u> ,00	<del>100,779</del> <u>5,026,601</u> ,00
2016	678,000	<del>551,572,00</del> <u>0</u>	255,837,00	<del>4,871,171</del> <u>10,368,540</u> ,00	<del>100,564</del> <u>4,871,171</u> ,00
2017	637,000	514,952,00	241,868,00	<del>4,616,072</del> <u>10,063,372</u> ,00	<del>98,864</del> <u>4,616,072</u> ,00
2018	595,000	502,142,00	230,734,00	<del>4,383,469</del> <u>9,636,478</u> ,00	<del>85,641</del> <u>4,383,469</u> ,00
2019 (est)	599,000	511,955,00	234,145,00	<del>4,337,149</del> <u>9,618,883</u> ,00	<del>84,652</del> <u>4,337,149</u> ,00

Source: National Transportation Database, 2019

As discussed in the section on Congestion above, thanks to induced demand, transit cannot reduce congestion significantly. However, better transit reduces the *impact* of congestion on a community, giving people the option to bypass or ignore congested roadways. 75 percent of Survey Questionnaire respondents said that improving and expanding local transit should be a priority for the City, and 80 percent said the same of regional transit. Almost half of respondents said better regional transit was urgently needed.

#### ~~Transit-oriented development~~**Oriented Development**

While none of the transit operators servicing the city are operated by the City, decisions made by the City can help ensure healthy use of transit and integrate it into the fabric of the city's transportation network. Among these are encouraging transit-supportive land-uses, ensuring walking to potential transit corridors is feasible within new developments, and

strategically locating bus-only lanes along highly-congested roads. The City will also be an advocate for more effective transit service to and through the ~~city~~City.

Transit-supportive land-uses, also known as Transit-Oriented Development (TOD), are a kind of development pattern specifically designed to improve transit ridership. Generally, the most successful projects have the following characteristics, each of which take advantage of practical research into human behavior towards public transit:

1. TOD extends a half-mile walking distance from a rail station or a quarter-mile from frequent bus service, as this is how far the average person is willing to walk from home to transit. (A typical person is willing to walk about half this distance to work from transit.)
2. TOD utilizes a road grid to maximize the area walkable from the transit stop.
3. TOD consists of rings of primary uses around a rail stop: first retail for one-eighth of a mile, then office out to one-quarter of a mile, then homes out to a half-mile. (Each distance is cut in half for bus transit.) While these uses overlap, so homes may be within every part of the TOD, these primary uses become less common as one moves away from their part of the TOD. These ring distances are roughly the distance people are willing to walk from a transit stop to that particular use.
4. TOD places denser uses towards the transit stop.

Transit-supportive land uses can also be implemented where there is no existing transit in order to anticipate and support better transit in the future. For instance, a developer might place higher density development or a destination such as a park adjacent to a major collector or arterial road which a bus is more likely to serve.

Maryland allows counties to designate transit-oriented development areas around high-capacity transit stations, such as downtown Frederick's MARC station. Doing so allows ~~hosting~~ jurisdictions to unlock certain funding mechanisms, including tax-increment financing, which can then be used to enhance the development area. These might be parking structures, street beautification, affordable housing subsidies, bicycle lanes, road redesigns, and more. In Frederick, for instance, trains must sound their horn as they approach the station, reducing the quality of life for neighbors. Upgrading intersections to create "quiet zones" is an expensive undertaking, but one that could be done with TOD-related funds.

The City should work with the County to pursue a TOD designation that makes sense for its MARC station area.

### **Golden Mile**

The Golden Mile Multimodal Access Enhancement project will be a significant improvement to bus transit service along one of the City's primary retail corridors. The project will install bus-only lanes in the westbound direction, allowing buses to skip traffic congestion. This will speed trips and save on operating hours, freeing operating funds for TransIT to reinvest in bus frequency or coverage. Just as importantly, a shared-use path will be constructed adjacent to the bus lane to accommodate the many nearby residents the walk and bike in the corridor.

## New transportation systems

Over the past decade, urban transportation options have broadened significantly, with the advent of car sharing like Zipcar and Car2Go; micromobility like bike and scooter sharing; transportation network companies like Uber and Lyft; and the first tentative steps towards autonomous vehicles. As the City looks towards its future, it must be open to participating in newly-established transportation systems and proactive in planning for potential disruptions.

### Car ~~sharing~~Sharing

Car sharing companies allow people to rent vehicles for short-term use, generally less than an hour. While each company has its own model, broad themes are present. Zipcar, the first major car sharing company in the United States, uses dedicated parking spaces on streets, in garages, and in ~~garages and~~ parking lots to store its fleet. ~~Any member~~Members can rent any vehicle in the fleet either for a daily flat rate or by the half-hour. Members reserve a time slot in a given vehicle and must return it to the vehicle's designated spot.

A second model, pioneered by Car2Go (renamed, as of 2020, ShareNow), allows users to pick up and drop off vehicles anywhere within the system's boundaries. In Washington, DC, where the company operated until early 2020, those boundaries corresponded to the boundaries of the District, with certain areas like Rock Creek Park being off-limits for drop-offs. Unlike Zipcar, which requires users to make round trips, ShareNow enables users to make one-way trips. While more flexible, this model requires a certain density of users to ensure cars remain in use. Fees are either a flat rate for a certain amount of time or by the minute.

The benefit of car sharing is that it enables people to not own a vehicle but still have access to a vehicle. Studies on the subject have found that each car-sharing vehicle in use can reduce parking demand by four spaces at a minimum. Further, members of car sharing networks drive less, reducing VMT and, therefore, also reducing pollution and traffic congestion. ~~Given that some~~Currently there are no car sharing services ~~are not that operate within the City of Frederick outside of Zipcar, which is currently~~ available ~~in downtown, partnering at Hood College. Partnering with car-sharing companies may~~ZipCar to expand to other neighborhoods or inviting pilot allow people to live car-free without sacrificing their ability to fully access the City's amenities.

Zipcar is currently available at Hood College. The City may wish to investigate expanding service to other neighborhoods and integrate it into new apartment projects. Inviting pilot programs from other companies may also be fruitful.

### Micromobility

As discussed above under An Integrated Bicycle Network, 48 percent of all trips in the United States are 3 miles or less, and micromobility – bicycle and scooter share – could

replace half of those:<sup>4</sup> (*Reed, Managing Micromobility to Success*). Given the small size of the City, with ~~nowhere~~nothing more than 5 miles away from Square Corner, micromobility could have a dramatic impact on how people experience and travel in the City.

The two dominant models of micromobility are similar to those of car sharing. One, pioneered in the region by Capital Bikeshare, establishes set docks: for its bikes. Members may ride ~~vehicles~~the shared bikes to and from docks, allowing one-way trips but also requiring a certain density of docks to allow for easy rebalancing, and to ensure there are enough vehicles or docks in a given area where there is demand. The second is dockless. Much like ShareNow (formerly known as car2go), this model allows users to drop off ~~vehicles~~bicycles anywhere within the service area and not simply at a dock. This second model often leads to complaints of ~~vehicles~~bicycles blocking sidewalks, though it also means greater flexibility for users and much less physical infrastructure to maintain.

Docked systems almost exclusively use bicycles. These may be electric-assist, which makes hills easier to navigate, or entirely manual. Dockless systems, in the DC region, consist either of electric-assist bikes or electric scooters.

Electric scooters are a new mode entirely. Often capped at 10 or 15 miles per hour, they allow people who may not feel comfortable on a bicycle for sartorial, meteorological, or physical reasons, to easily travel around a city with some speed. Unfortunately, users often ignore directives to stay off sidewalks because they do not feel safe mixing with general traffic. They also tend to weave on and off the sidewalk into the roadway as they encounter obstacles or hazards in one realm or the other. As a result of their speed, pedestrians do not feel safe sharing space with scooter users (because users are moving too fast relative to walking speed) and drivers get impatient if users mix with traffic (because users are also moving too slow relative to driving speed). Finally, though ~~automobiles are effectively privately-owned dockless vehicles~~—and significant portions of the public realm are already dedicated to the storage of this private property—automobiles—which are privately-owned dockless vehicles—there is also often criticism of the use of public space for electric scooter storage.

Both electric scooters and bike share lower the barrier to entry for people who want to ride a bike or get around faster than a car but either want the flexibility of making just one-way trips or who don't own a bike themselves. This can help build a more inclusive and open bicycle culture by encouraging casual users. It can also lower VMT by encouraging people to take a bike or scooter rather than drive to a destination that is too far to walk.

~~The~~

~~To that end, the City should launch~~might investigate launching pilot programs of both electric scooters and bike sharing. ~~Special care must~~If the City so chooses, consideration should be paid to scooters given ~~the negative receptions non-~~to enacting legislation covering scooter users have given them. Scooter and providers, including setting appropriate speed

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<sup>4</sup>Reed, "Managing Micromobility to Success".



caps ~~should be adjusted to ensure users feel safe next to scooters integrate well with pedestrian, bicycle and automobile traffic to discourage sidewalk use.~~ Other municipalities have encountered significant operational and political challenges with scooters. Current programs in place across the country would need to be researched for best practices and lessons learned.

### **Transportation Network Companies**

App-based ride-hailing services have revolutionized transportation across the United States. Known as transportation network companies, or TNCs, they have disrupted the long-entrenched taxi industry, pushing many companies out of business while also opening up vast areas to service that never had it before. As of the drafting of this Plan, however, these TNCs operate at a significant financial loss. One company, Uber, lost \$1.3 billion in the second quarter of 2019, excluding one-time costs. Its closest rival, Lyft, lost \$644.2 million in the same time period. It is outside the scope of this Plan to guess whether these losses are temporary or what form a profitable and therefore sustainable TNC might take.

While large cities like San Francisco have seen traffic increase due to TNCs, Frederick is too small to see much increase in traffic. Instead, TNCs have allowed people to access nightlife without worrying about driving and have freed people to leave their car at home. The City should take a wait-and-see approach to TNCs, neither relying on them to be a major mobility option for its residents nor discounting their usefulness for certain kinds of trips.

### **Connected and ~~autonomous vehicles~~Autonomous Vehicles**

Few transportation issues have garnered as much hype as the integration of AI with cars and trucks. While self-driving trains have existed for decades as airport shuttles (as at Dulles International Airport) and mass transit systems (including, until 2009, DC's Metrorail, whose drivers merely monitored the system and operated the doors), it is the opportunity to bring self-driving vehicles to our roads that seems to most excite the public imagination.

Unfortunately, connected and autonomous vehicles, or CAVs, have taken longer to develop than expected. The urban road environment is incredibly complex, with drivers relying on visual cues ranging from signage to a wave of a pedestrian's hand to a fellow driver's gaze. There are cultural issues as well, with some places allowing rolling stops, others allowing a left-turning driver to go ahead of oncoming traffic after a light change, and so on. Even on limited-access highways, we can see how someone might be trying to nudge into the adjacent lane and know to let them go ahead before you merge. Translating these minute and idiosyncratic signals into a self-driving car is a monumental task.

CAVs can offer significant benefits over traditional vehicles. Even at partial automation, they can automatically brake or take other defensive action if the vehicle senses danger. As full automation takes over the broader vehicle fleet, CAVs will be able to "platoon" along freeways, reducing stopping distance and potentially tripling the number of vehicles a freeway lane can accommodate per hour. While still nowhere near the capacity of a bus lane, ~~dedicating a lane specifically to CAVs would maximize this potential, encourage CAV adoption, and~~ may allow for better use of land than ~~general-purpose~~ freeway lanes.

Another benefit is door-to-door drop-offs, with the vehicle driving itself to a remote parking location, which will reduce demand for downtown on-street and close-in garage parking.

CAVs also pose significant challenges. They may increase the amount people drive – raising VMT – by reducing some of the mental load of driving and allowing people to do other things while traveling. They may also significantly clog roads. In congested cities, TNCs already cause congestion by circling for passengers, reducing the number of travelers per vehicle to less than 1, compared to 1.6 today. And the solution to the difficulty of programming AI to read hand signals and pedestrians may be to simply limit non-driver access to streets. These drawbacks will increase demand for surface road space even as platooning decreases demand for freeway space.

~~However,~~

Given that the earliest estimate for a rollout of a fully autonomous passenger vehicle is somewhere around 2030 with widespread adoption only coming about around 2040, ~~so the~~ City has time to see what problems and benefits arise in larger cities. Frederick must be open to new technology but should also keep in mind that the strength of the City's economy rests on a strong, walkable downtown. As well, the safety and accessibility of City streets for all users, whether in a CAV or not, must be ~~taken as at the~~ paramount concern. ~~Both~~ Alongside the importance of safety and, downtown ~~vibrance~~ vibrancy must also be accounted for when considering regulations for CAVs and whether to allow testing in City limits.

#### ~~Unmanned aerial vehicles, drones~~ Aerial Vehicles, Drones, and other next-generation technology ~~Other Next-Generation Technologies~~

Perhaps even more so than CAVs, unmanned aerial vehicles (UAVs) and surface drones are experimental technologies. Both have a variety of uses, with UAVs envisioned for passenger service and both UAVs and drones envisioned for package delivery and other small freight. Neither are currently in operation.

UAVs for passenger service should be treated similarly to helicopters, with tight regulations on use. Given that estimates of passenger load are relatively low, they will likely remain a niche use for major transportation, with potential uses as ambulances or airport shuttles. The square footage required for parking is also quite high, and ~~so even in large cities~~ it is simply not possible to move significant numbers of people using the technology.

As freight, the City should remain cautious. Regarding UAVs, noise, privacy, airport interference, and public safety are all issues that need to be addressed. Surface drone delivery may also prove problematic given the city's narrow sidewalks, as drones would need to share space with pedestrians. Given limited resources, the City may wish to opt out of testing for package delivery unless a truly compelling case is made by the company doing the testing.

#### Equitable Access to the City

In 2018, according to the US Census, approximately 1 in 8 Frederick households had fewer vehicles available than workers, and 1 in 20 had no vehicle available at all. This may hide the number of people who need a vehicle but find it to be a strain on an already-tight budget. Between maintenance, car payments, gas, depreciation, and insurance, a car can cost more

than \$8,000 per year according to AAA. A used car might be cheaper but will still cost thousands of dollars per year.

Even for those who could afford a vehicle, many cannot drive due to visual impairments and other disabilities, such as vulnerability to seizures. Friends, transit, taxicabs, and transportation network companies (TNCs) like Uber and Lyft provide some mobility, but these options are either burdensome or more expensive than driving and are not equivalent to the freedom of movement given to drivers.

Incomplete bicycle and walking networks alongside low-density land-use and low-quality transit means car ownership is the only way to fully participate in City life. Those who cannot drive or own a car in such a situation must rely on their social networks to provide rides to and from events, jobs, shopping, education, and even civic participation. City residents should never feel left behind or disconnected from the rest of their community because of transportation problems.

This plan must therefore be implemented with special care for those who rely on means of travel other than driving, and special attention should be made to reach out to communities where driving is a lesser option. Some ways to incorporate equity into the City's planning practices are:

1. Coordinate with community groups active in low-income and minority communities for public outreach.
2. Conduct outreach in neighborhoods and in formats that cater to populations that may not be able to attend meetings or may feel uncomfortable in traditional public feedback settings.
3. Ensure neighborhood vehicle ownership rates and income are considered when modelling and prioritizing transportation spending.

## **Airport**

The Frederick Municipal Airport (FDK) plays an important role in providing general aviation capacity relief for the heavily congested airspace in the Washington-Baltimore region. Frederick's airport supports the Baltimore-Washington International airport by offering general aviation pilots with an alternative to the use of scheduled service airports. FDK is the preferred executive airport in the National Capital Region and, with more than ~~8090~~8,000 aircraft operations annually, is Maryland's second-busiest airport behind BWI. FDK is host to 203 aircraft, 9 businesses, and 150 jobs. Additionally, it is important to note that FDK is the headquarters of The Aircraft Owners and Pilots Association (AOPA), the world's most influential general aviation organization.

The airport serves our community in several ways: Maryland State Police – Trooper 3 is based at FDK providing rapid access to law enforcement, search and rescue, and medivac services. Aerial mapping, on-demand air charter, organ and medical transplant, and advanced flight training are at the fingertips of the community. Businesses heavily rely on unscheduled

aircraft transportation to remain competitive and a fully developed multi-modal transportation infrastructure is often a key component when selecting a business location.

Since the adoption of the 2010 Comprehensive Plan, many improvements have occurred to make the Airport more efficient. These include the construction of the air traffic control tower, a 600' extension to runway 5, the construction of the snow removal equipment building, and the grading and preparation for multiple hangar developments.

[Insert Airport brochure diagram]

This plan addresses the types of land use and road improvements that need to occur to accommodate future expansion and continue the airport's status as a reliever airport within the region. Accordingly, future expansions at and adjacent to the airport should be coordinated with the Airport Master Plan in order to provide proper guidance for land use and future capital projects. The City must collaborate with the County to ensure that the growth of the surrounding lands allows for expansion of the airport to meet the region's economic development needs

## Funding Sources

Obtaining funding is one of the most challenging aspects of providing transportation improvements. Major transportation improvements rely heavily on federal and state dollars to implement. Ensuring City priorities are aligned with the funding programs available poses significant difficulties, especially in the realm of bicycle, pedestrian, and transit improvements.

Policies in this Element identify not only transportation needs for future years but also the need for the City to consider other potential funding tools. Grants, additional funding sources, and cost-sharing will be needed in order to implement transportation improvements associated with new development, or improvements built in partnership with various municipalities and regional transportation agencies.

Traditional sources of transportation financing include the City's General Fund, highway user fees, grant funds, and developer contributions. However, adjacent jurisdictions often compete for the same external funding sources; this competition and so may limit the amount of funding available for a project.

The ability of a finance program to generate the needed revenue for a project is a key measure of its success. Thus, what is needed is a stable stream of revenue that remains constant over time. Currently, the limited availability of a constant revenue source limits the City's ability to plan for and maintain transportation projects. The traditional sources of revenue listed above can fluctuate unpredictably. The reverse can also be true: periods of excess revenue may result in the funding of projects that are not related to long-range transportation efforts due to political pressure. The introduction of a stable revenue source would be beneficial in completing transportation projects.

## Mobility Fee

Most jurisdictions nationwide require new development applications to conduct a transportation impact analysis or study that quantifies the additional travel demand expected to be generated by the proposed development and to give recommendations on how to alleviate any adverse impacts caused by that new travel demand. This approach was designed for and generally applies to greenfield development, but in urban areas the conventional traffic study approach often results in recommendations that are impractical due to right-of-way constraints or undesirable due to auto-centric design in urban contexts where multimodal needs are paramount.

Therefore, jurisdictions are considering alternative approaches to assess traffic impact in urban areas, selecting a pro-rata share district approach to development application reviews. In this approach, mobility needs are considered districtwide and the responsibility for private sector involvement is defined based on proportional contributions to address districtwide needs rather than needs directly associated with a particular application. Often, the private sector responsibility in this case takes the form of an applicant payment. The term “mobility fee” is an emerging term-of-art that describes this type of pro-rata share district.

In simplest terms, pro-rata share districts assess development application impacts according to a three-step formula expressed as:

$$\text{Mobility Fee} = (A/B) \times C$$

where:

**A** is the cost of transportation system improvements needed to accommodate the demand generated by expected land development,

**B** is a measure of the demand generated by that expected land development, and

**C** is a policy decision regarding the balance of private-sector and public-sector responsibility in providing the improvements in item A.

This basic pro-rata share formula is quite simple, but the details of components A, B, and C vary substantially from place to place and will be developed through a public process that considers the interests of all stakeholders.

As part of comprehensive amendments to the City’s Adequate Public Facilities Ordinance (APFO), the Mayor and Board of Alderman have directed City staff to pursue a mobility fee approach with examinationa goal of establishing one or more Mobility Fee Districts ~~to be established~~.

## Regional Collaboration

The City of Frederick is proud of the wide variety of collaborative efforts underway within the region. The City’s membership in the Metropolitan Washington Council of Governments (MWCOC) provides access to federal transportation funding. Other federal efforts to work toward mutual infrastructure goals include the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). On a state level, collaborative partners include the

Maryland Department of Transportation (MDOT), which operates the State Highway Administration (SHA), the Maryland Aviation Administration (MAA) and the Maryland Transportation Authority Transit Administration (MTA), which in turn operates the Maryland Area Rail Commuter (MARC) train service and MTA Bus Service. Finally, at a local level, the City also partners with groups like the Chamber Transportation Advisory Committee and the Transit Services Advisory Committee/Council regarding future transportation needs.

As detailed in a prior section of this Chapter, Frederick's transportation system is not limited to the City and County network. Accordingly, several policies in this Element address Frederick as part of the larger transportation network of the Baltimore-Washington metropolitan region. Frederick's position in the region represents another potential hurdle: the need to coordinate the City's land-use and transportation planning within a regional context.

The policies in this Element that address regional collaboration focus on the creation of a more organized policy structure that includes routine coordination with regional transportation agencies. This type of intergovernmental collaboration would assist in creating a unified vision for linking land-use and transportation decisions among the region's communities with the goal of providing the following transportation elements:

- Complete networks of walking, bicycling, and driving infrastructure allowing convenient access to the County and broader region;
- Convenient and easy public transit systems from Frederick to regional centers.

## Transportation Element Policies and Implementation

### TR Policy TE-1

Use the future Comprehensive Plan text and the Comprehensive Plan Map to coordinate the phasing of development with transportation capacity and improvements.

**Implementation**

#### IMPLEMENTATION

1. Coordinate the timing of local and regional implementation of transportation improvements with other infrastructure improvements.
2. Establish a mechanism through the capital budget process including a monitoring report that coordinates and integrates development, transportation system improvements, and fiscal impacts.
3. Update the City's development regulations and standard city details to ensure consistency with the Comprehensive Plan's transportation maps and text.
4. Continue to support and pursue the missing segments of Christopher's Crossing.

5. Continue to implement the Adequate Public Facilities Ordinance for transportation systems to phase development with the availability and adequacy of existing and future transportation corridors and identify areas to improve the ordinance as needed.

6. Include green street design in the Engineering Department's Manual of Standard Details for Construction to allow for natural infiltration where possible and reduce impervious surface.

#### **TR Policy TE-2**

**Maintain an appropriate balance between public and private sector responsibilities for transportation investments and improvements.**

##### **Implementation**

#### **IMPLEMENTATION**

1. Identify and earmark a stable revenue stream for transportation improvements, such as a mobility fee.
2. Maintain an aggressive but financially responsible capital budget for future transportation improvements.
3. Establish a mechanism through the capital budget process including a monitoring report that coordinates and integrates development, transportation system building, and fiscal impacts.

#### **TR Policy TE-3**

**Reduce per-capita vehicle miles traveled (VMT) byin the City ~~residents~~.**

##### **Implementation**

#### **IMPLEMENTATION**

1. Work with the State and Region to develop means to estimate current and future VMT in the City.
2. Continue to educate the community about non-driving modes of transportation through events and initiatives that promote the health benefits and availability of those options.
3. Partner with TransIT to determine how to make the service a more viable alternative mode of transportation, whether through service redesign or additional infrastructure.
4. Continue to encourage new ridership in all segments of the population through marketing campaigns with TransIT and private transportation operators.

5. Offer City employees ~~buy-outs for City provided~~ the option of the value of a monthly parking ~~passes~~ pass to forego the pass.
6. Encourage local businesses to offer the value of a monthly parking pass ~~buy-outs for to~~ their employees in place of a flat parking pass benefit.
7. Adopt regulations to allow micromobility companies to operate in a safe, equitable, and efficient manner.
8. Establish a pilot program allowing bicycle and scooter sharing companies to operate a limited number of vehicles for a limited amount of time, followed by policy recommendations.
9. Work with car sharing services to determine how best to encourage fleet growth and adoption in the City.
- ~~Remain flexible with regards to~~
10. Begin to plan for connected and autonomous vehicles for passengers and freight, ~~keeping focusing on pedestrian and bicyclist safety and the priority focused on~~ reducing reduction of VMT and maintaining a walkable city rather than early adoption of these new technologies.
11. Encourage transit subsidies rather than parking subsidies by employers, including the City.

#### **TR Policy TE-4**

**Promote bicycle mobility and construct a dense and complete bicycle network consistent with All Ages & Abilities contextual guidance.**

#### **Implementation**

#### **IMPLEMENTATION**

1. Supplement the Comprehensive Plan with a Comprehensive Bicycle Plan to coordinate the phasing and construction of Frederick's on- and off-street bicycle network.
2. Work with ~~state~~ County, State, and federal agencies to improve bicycle safety on or adjacent to non-City-operated roads, including on- and off-ramp intersections.
3. Promote the integration of all transportation modes within office and residential parking areas, such as transit stops, additional sidewalks, and bicycle parking ~~design~~ in appropriate locations.
- ~~Continue to support~~
4. Enhance the Frederick History Bike Loop with necessary infrastructure for safe travel throughout the network as well as additional signage and amenities to add value to the ~~existing point~~ experience.



5. Accelerate the completion of interest and significant resources outside of the City's core-planned multi-use trails that developers are not likely to construct.
6. Coordinate with the County and neighboring jurisdictions on connections to the C&O Canal Towpath, Middletown, Thurmont, and to the regional trail networks.

#### **TR Policy TE-5**

**Create and maintain a fully accessible sidewalk/pedestrian network throughout the City.**  
**Implementation**

#### **IMPLEMENTATION**

1. Determine an appropriate capital improvement funding division between singular large projects and ~~small interventions~~smaller projects to ensure these small but impactful projects are prioritized.
2. Identify areas with unpassable or missing sidewalk infrastructure, including unmarked crosswalks, culverts that cross sidewalks, and uneven brickwork, and develop plans to build, ~~repair~~, or retrofit sidewalks where applicable.
3. Determine ways for the City to coordinate repairs with the responsible property owner(s) at impassible or otherwise damaged sidewalk segments.
4. Widen sidewalks in areas with high pedestrian densities where possible.  
~~Develop~~
5. Support the American Society of Landscaping Architects annual (PARK)ing day event by allowing metered parking spaces to be transformed into temporary parks and gathering spaces and develop policies to allow merchants and the City to participate in ~~World PARK(ing) Day~~ on the third Friday of September each year.
6. Develop a Comprehensive Pedestrian Plan.

#### **TR Policy TE-6**

**Direct the flow of freight traffic to those facilities that are most suitable and away from other routes and areas where through truck traffic is incompatible with adjacent land uses or may cause safety issues.**

**Implementation**

#### **IMPLEMENTATION**

1. Develop a system of truck routes with the following goals:
  - a. Reduce South Street truck traffic.
  - b. Reduce alleyway truck traffic in the downtown.
  - c. Restrict delivery time for key City arterials.



- ~~7. Support the American Society of Landscaping Architects annual (PARK)ing day event by allowing metered parking spaces to be transformed into temporary parks and gathering spaces.~~

#### **TR Policy TE-8**

**Ensure that any new transportation improvement does not adversely impact the City's neighborhoods.**

##### **Implementation**

#### **IMPLEMENTATION**

1. As part of all decisions for major transportation improvements, continue to balance the need to maintain the unique character and quality of life of the City's historic neighborhoods while keeping in mind the ahistorical nature of automotive traffic and street parking.
2. Work with state and local jurisdictions on city streetscape designs that minimize impacts on Frederick's neighborhoods; historical and archeological resources; aesthetics; vistas; and which maximize bicycle/pedestrian facility connections consistent with other policies above.
3. Implement mitigation strategies if cultural or historic resources will be irreparably impacted by new or existing road construction.
4. Modify the design of new and expanded roads to protect historic resources and their settings.

#### **TR Policy TE-9**

**Prioritize safety and complete streets elements in the design and capacity standards for all roadways.**

##### **Implementation**

#### **IMPLEMENTATION**

1. Review and update existing standards for different types of roadways:
  - a. Ensure minimal rather than maximal lane widths consistent with relevant national standards.
  - b. Ensure design speeds are equal to or below desired speed limits so as to limit safety concerns for pedestrians and bicyclists as well as crash severity.
  - c. Create new pedestrian-primary and slow-street roadway types to allow design flexibility in new developments.

d. Ensure bicycle and pedestrian infrastructure is consistent with All Ages & Abilities guidelines.

2. Reduce traffic congestion by actively managing the operation of the transportation system during peak travel periods.

3. Restructure procedures to accommodate all users on every project.

#### **TR Policy ~~TE~~-10**

**Support enhanced regional public transportation options.**

##### **Implementation**

##### **IMPLEMENTATION**

1. Work with TransIT, MDOT MTA, (commuter bus and MARC train), and neighboring jurisdictions to provide viable regional transit options for non-commute-~~and~~, reverse-commute-~~trips~~, and seven-day service for access to Montgomery County, the District of Columbia, ~~and~~ the Baltimore region, and Fairfax County.

##### **Support**

2. Advocate for global best-practices in rail procurement and operations to ensure maximum value from MARC and WMATA for the City's residents, visitors, employees, and businesses.

##### **Support**

3. Advocate for the determination of the ridership potential of reverse-peak, off-peak, and weekend MARC train service and regional bus service.

4. Work with ~~the County and State~~MDOT to designate the downtown MARC station area as a ~~transit-oriented development zone~~Transit-Oriented Development Zone.

##### **Support**

5. Work with private regional and airport shuttle bus service and determine areas of common interest.

#### **TR Policy ~~TE~~-11**

**Support airport development in accordance with the approved Airport Layout Plan (ALP) and ensure policies of the Comprehensive Plan are compatible with the efforts to update the ALP in 2020.**

##### **IMPLEMENTATION**

1. Develop the Bailes Lane area in accordance with the Bailes Lane Re-Use Plan (BLRUP).- This plan provides enhanced potential for the long-term development of the airport, minimizes potential land use conflicts in adjacent development, and has

moderate costs for the overall plan. As a second phase to the BLRUP, implement the extension of the of the airport's main runway to 6,000 feet.

2. Construct flexibly-sized aircraft hangars on the north end of the airfield adjacent to the existing 80 terminal hangars.
3. Develop corporate and general aviation hangars, in coordination with existing and future airport users.
4. Adhere to the FAA and Homeland Security regulations with respect to air protection zones.
5. Include local interest groups who support the airport from a transportation standpoint, such as ~~FACT and~~ TSAC, in the progress of the airport.

#### **TR Policy ~~TE~~ 12**

**Preserve and enhance transportation capacity and multi-modal travel on local, collector and arterial routes that serve the City of Frederick.**

##### **Implementation**

#### **IMPLEMENTATION**

1. Support efforts to forecast the impacts of different modal split assumptions when forecasting future demand on area and regional roadways.
2. Promote the MARC train station vicinity as a multimodal transportation hub and a mixed-use development area.
3. Work with Frederick County and ~~the State of Maryland~~ MDOT SHA to improve safety and relieve congestion ~~in~~ on US 15 with a minimal addition of VMT to the regional transportation system.
4. When resurfacing existing streets, apply road diets where reasonable to improve operations and safety; to provide bicycle facilities in accordance with NACTO All Ages and Abilities guidance; and pedestrian facilities in accordance with the Americans with Disabilities Act.

#### **TR Policy ~~TE~~ 13**

~~Work~~ **Collaborate** with MDOT, Frederick County, MWCOG/TPB, TSAC, ~~TPB~~,



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and CTAC to develop joint and complementary transportation planning programs.

## **Implementation**

### **IMPLEMENTATION**

1. Identify, develop, and promote local and regional programs to improve traffic efficiency.
2. Continue City participation on local and regional transportation groups.
3. Continue to work with Frederick County, adjacent municipalities and local organizations on the transportation opportunities that must be addressed by all jurisdictions to mitigate congestion and eliminate hazards.
4. Support events such as Bike to Work Day and Car Free Day that educate about alternatives to the use of motor vehicles on all road networks.
5. Implement a joint County/City Vision Zero Policy to improve safety for bicyclists, pedestrians and motorists.

## **TR Policy 14**

**Maintain the City parking system's balance between supply, demand, customer service, and financial self-sufficiency.**

### **IMPLEMENTATION**

1. Identify and develop additional revenue streams to fund new garages.
2. Construct a new garage to ensure adequate supply to meet expected demand from new development.
3. Mitigate demand for parking by providing the infrastructure for non-driving modes of transportation within, to, and through the City.
4. Promote the construction of new alleyways where homes do not have alleyway access and rear parking at homes that already have alleyway access.

## **TR Policy 15**

**Actively incorporate the considerations of underrepresented communities and low-income residents in the transportation decision-making process.**

### **IMPLEMENTATION**

1. Coordinate with community groups active among minority communities and with low-income residents for public outreach to elevate and include those voices in public discourse and decision-making.

2. Conduct outreach in neighborhoods and in formats that cater to populations that may not be able to attend meetings or may feel uncomfortable in traditional public feedback settings.
3. Ensure neighborhood vehicle ownership rates and income are considered when modeling and prioritizing transportation spending.
4. Actively recruit underrepresented populations to advisory boards, committees, and other volunteer positions.
5. Enhance bicycle parking and bicycle access to downtown and outlying job centers.
6. Commission a comprehensive anti-racism plan with recommendations for transportation policy.